

Instruction Manual for the Altimeter MicroSensor V3

Document Version 1.6

Thank you for your purchase! This instruction manual will guide you through the installation and operation of your Altimeter MicroSensor V3 (the Altimeter). ***Please read the entire manual carefully before proceeding.*** If, after you read the manual, you have further questions or problems, see the Support page on <http://www.eagletreesystems.com> for additional information, or email us at support@eagletreesystems.com. Please visit our support web page for the full color, electronic version of this manual which may be updated if changes were made after printing, or if you want to view the manual on your computer.

What the Altimeter Does

The Altimeter is a precision instrument that uses barometric pressure to measure altitude, just as full sized planes do. Advanced temperature compensation and calibration ensure the best possible accuracy. When used standalone, the Altimeter displays your maximum altitude on the built-in 7 segment LED display. The maximum altitude continues to be updated and displayed on the LED, until you turn power off and on the MicroSensor. When power is turned off and on, the maximum altitude from the last flight is displayed, and now the MicroSensor is ready to record your next maximum altitude (even if it is lower than the previous maximum altitude).

Additionally, the Altimeter can be connected to your eLogger (any version) to provide altitude data for your entire flight, and can even be used in your own microcontroller/firmware project. When connected to the eLogger, altitude can be displayed and graphed using the eLogger's Windows software.

IMPORTANT: The Altimeter Microsensor is intended for use exclusively in model planes, boats and cars. Other uses are not supported. It is extremely unlikely that the installation of the Altimeter will affect your model's radio range or control. But, as always after making an electronics change to your model, it is very important that you range and function test your model once the Altimeter is installed to ensure that there is no impact on your system.

Packing List

Your package should include the following: The Altimeter, the Standalone Cable, and a printed version of this manual.

Installing the Altimeter in your Model

The Altimeter can be mounted anywhere in the model. If you wish to read the LED without removing the wing, a small rectangular hole can be cut at the mounting location of the circuit board, and the board mounted with tape or Velcro, so that the LED is visible at all times. If your model does not have lots of turbulence or pressure variation inside the fuselage, no additional mounting steps are needed.

If the model has a "ram" air intake for cooling, or travels at high speeds, a small hole (approximately 2 mm diameter) can be created in the side of the model's airframe (fuselage), to create a static port. The hole should be placed in an area of the airframe that is perpendicular to the direction of travel (approximately where the cockpit door would be on a full sized plane). The altimeter's sensor port can then be connected to that hole, using a small piece of silicon tubing, so that the edge of the tubing is flush with the outside skin of the fuselage.

Alternatively, if you are using our Airspeed MicroSensor V3, the static line of the Airspeed MicroSensor can be shared with the altimeter, using a small plastic "T" fitting.

Using the Altimeter in Standalone Mode

Powering the Altimeter in Standalone Mode

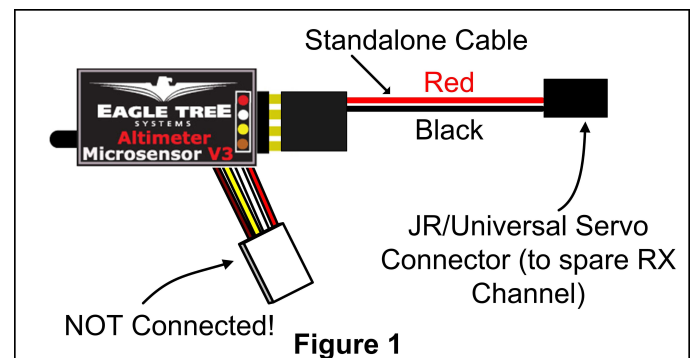
For standalone mode (not connected to an eLogger), connect the Standalone Cable to the gold pins of the Altimeter, as shown in Figure 1.

The polarity of the connection is as follows:

RED = Positive (Vdd)

BLACK = Negative (ground)

Note that the RED wire of the standalone cable corresponds with the red dot on the label.



The JR/Universal servo end of the Standalone Cable connects to a spare Receiver channel or small battery. Note that the voltage must be between 3V and 16V. **Do not exceed 16V!**

IMPORTANT: Ensure that you connect the Standalone Cable with the correct polarity, or the Altimeter could be damaged, voiding the warranty!

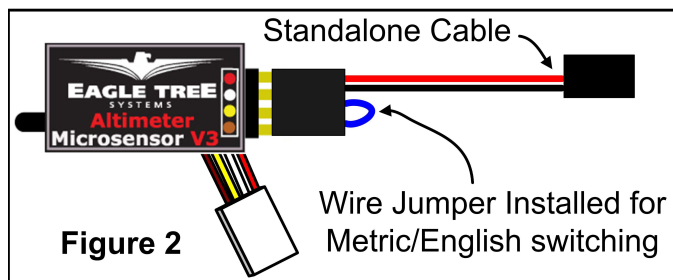
Note that in Standalone Mode, the 4 wire cable built into the Altimeter must NOT be connected to anything!

Configuring Metric vs English Units in Standalone Mode

When powered on, the LED readout will briefly display “0” if the unit is configured for English (Feet), or will display a “1” if configured for metric (Meters). The factory default configuration is Feet.

To switch between English and metric units, connect the Standalone Cable as described above, but don’t power the Altimeter. Then, connect a small piece of wire between the unconnected pins of the Standalone Cable’s 4 pin connector, corresponding to the brown and yellow dots on the label, as shown in Figure 3. This creates a jumper between the brown and yellow labeled pins.

Then, power the Altimeter via the Standalone Cable. A “0” will then flash a few times to indicate that English units are configured, or a “1” will flash if Metric units are configured. If the wrong units are configured, just disconnect the power from the Altimeter and reconnect it.



Once the desired units are configured, disconnect from power and remove the wire jumper. Then, when reconnected to power, the desired units should be displayed briefly (“0” or “1”).

Reading Altitude in Standalone Mode

When the Altimeter is powered on, after the Units setting is displayed (“0” or “1”), the highest altitude attained during your last flight is repeatedly displayed, one digit at a time, on the LED. For example, if the highest altitude attained was 320 Feet, “3 – 2 – 0” will flash repeatedly on the LED, with a pause (blank LED) after the altitude is completely displayed, but before it is displayed again.

To reset the max trigger, just turn power off and on to the MicroSensor. Then, after landing from your next flight, the highest altitude attained during that flight is displayed automatically, overwriting the highest altitude from your prior flight (even if the new highest altitude is less than the prior flight’s highest altitude). **Note that an altitude of at least 60 Feet (18 Meters) must be attained, before a new highest altitude is displayed.**

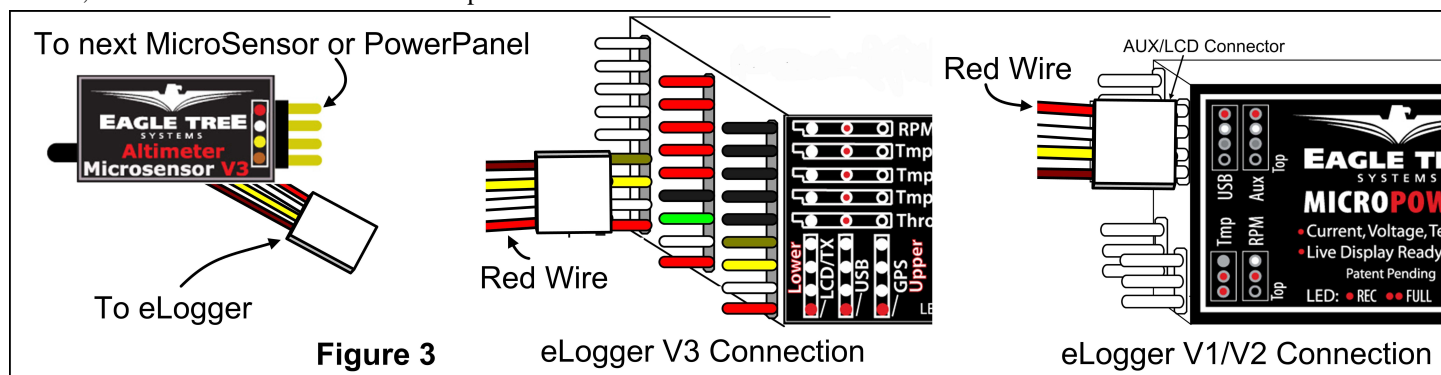
The highest altitude of your last flight is automatically saved, so that when you turn the unit back on, that altitude is displayed.

For example, if you fly and reach a max altitude of 100 Feet, when you land “1 – 0 – 0” will be displayed. Then, when you turn power off and on, “1 – 0 – 0” will again be displayed. If you then fly again and reach an altitude of 500 Feet, “5 – 0 – 0” will be displayed when you land.

Using the Altimeter with your eLogger

Windows Application and Firmware Update

To use the Altimeter, you must update to **Eagle Tree Windows Application version 6.77** or higher. To update, download the latest application from the support page of our website, located at <http://eagletreesystems.com/Support/apps.htm>. After downloading and installing the Application, the firmware of your MicroPower eLogger will need to be updated. To upgrade your firmware, just choose “Tools, Firmware Control” and click the Update button.



Connecting the Altimeter to the eLogger V3

The Altimeter plugs into the “LCD/TX” port of your eLogger V3, as shown in Figure 4. If you have a PowerPanel or other MicroSensors, those can “daisy chain” connect to the pins on the side of your Altimeter, with the polarity as indicated on the Altimeter label. **NOTE: The Standalone Cable must not be used when connected to the eLogger!**

Connecting the Altimeter to the eLogger V1/V2

The Altimeter plugs into the “Aux” or “LCD” port of your eLogger V1/V2, as shown in Figure 4. If you have a PowerPanel or other MicroSensors, those can “daisy chain” connect to the pins on the other side of your Altimeter, with the polarity as indicated on the Altimeter label. **NOTE: The Standalone Cable must not be used when connected to the eLogger!**

Configuring the Altimeter with the Windows Application

If you have not already done so, set up the Recorder software as described in your instruction manual. Then, choose one or more of the Altimeter options below:

Logging Altitude

To log altitude, just click “Hardware, Choose Parameters to Log in the Recorder” and check the “Altitude” box.

Displaying Altitude in the Windows Application

To display the Altimeter Gauge and/or Numeric Altitude Display, click “Hardware, Choose Instruments to Display on the PC Screen” and check the “Altimeter Gauge,” and/or “Numeric Altitude” boxes.

Graphing Altitude

To graph altitude, click “Graph Data/2D Chart,” select either the Left Y Axis or Right Y Axis, and select “Altitude” for graphing.

Displaying Altitude on the PowerPanel

Select “Hardware, Configure PowerPanel Display”, and choose “Altitude” for PowerPanel display.

Using the MicroSensor with your own Firmware/Microcontroller

Please see this document for information on using the MicroSensor with your own firmware:

<http://www.eagletreesystems.com/support/manuals/microsensor-i2c.pdf>

Troubleshooting

Below is a list of problems that may be encountered, and steps to remedy them. If your particular issue is not addressed by the below, see the Support page on <http://eagletreesystems.com> or email support@eagletreesystems.com. Include a full description of your problem, your PC configuration, your Eagle Tree hardware and software versions, and any other relevant information.

Issue: Altitude doesn’t vary in my recordings

Solutions:

- Ensure that the Altimeter is connected correctly to the MicroPower
- Ensure that you are logging altitude, under “Hardware, Choose Parameters to Log in the Recorder”

Specifications (Approx)

- Measures altitude up to approx 10,000 Feet (3048 Meters) Above Sea Level, with approx 4 Foot (1 Meter) Resolution
- Power input (Standalone Mode) – 3V to 16V
- Weight 4 grams (0.15 oz), dimensions 28 mm x 16 mm x 10 mm (1.1” x 0.62” x 0.4”)
- Precalibrated – no user calibration required
- Advanced Temperature Compensation
- Metric or English units

Limited Warranty

Eagle Tree Systems, LLC, warrants the Altimeter to be free from defects in materials and workmanship for a period of one (1) year from the date of original purchase. This warranty is nontransferable. If your unit requires warranty service during this period, we will replace or repair it at our option. Shipping cost to us is your responsibility. To obtain warranty service, email support@eagletreesystems.com for further instructions.

This limited warranty does not cover:

- The Software. See the Software license agreement for more information on Software restrictions.
- Problems that result from:
 - External causes such as accident, abuse, misuse, or problems with electrical power
 - Servicing not authorized by us
 - Usage that is not in accordance with product instructions
 - Failure to follow the product instructions

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE (OR JURISDICTION TO JURISDICTION). OUR RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR AND REPLACEMENT AS SET FORTH IN THIS WARRANTY STATEMENT. ALL EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN TIME TO THE TERM OF THE LIMITED WARRANTY PERIOD AS DESCRIBED ABOVE. NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THE LIMITED WARRANTY PERIOD HAS EXPIRED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THIS LIMITATION MAY NOT APPLY TO YOU.

WE DO NOT ACCEPT LIABILITY BEYOND THE REMEDIES PROVIDED FOR IN THIS LIMITED WARRANTY OR FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, ANY LIABILITY FOR THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES, FOR PRODUCTS NOT BEING AVAILABLE FOR USE, OR FOR LOST DATA OR LOST SOFTWARE. OUR LIABILITY WILL BE NO MORE THAN THE AMOUNT YOU PAID FOR THE PRODUCT THAT IS THE SUBJECT OF A CLAIM. THIS IS THE MAXIMUM AMOUNT FOR WHICH WE ARE RESPONSIBLE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.